



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,258	01/25/2002	Julie Ann Ward	10019700-1	4105

7590 10/04/2006

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

LIN, WEN TAI

ART UNIT	PAPER NUMBER
----------	--------------

2154

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/058,258

Applicant(s)

WARD ET AL.

Examiner

Wen-Tai Lin

Art Unit

2154

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4, 7-17 and 20-26 is/are rejected.
7) ☒ Claim(s) 5-6 and 18-19 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-26 are presented for examination.
2. The text of those sections of Title 35, USC code not included in this action can be found in the prior Office Action.

Claim Rejections - 35 USC § 103

3. Claims 1-2, 7-11, 14-15 and 20-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ambiehl et al.[U.S. PGPub 20020122421].
4. As to claims 1-2, Ambiehl teaches the invention as claimed including: a method for verifying a design for an interconnect fabric, the design including an arrangement of interconnect elements for interconnecting a plurality of network nodes and the design having requirements for a plurality of flows among the network nodes, and for each selected flow out of the plurality of performing a sequence of steps for associating the flow with a path for the flow through the interconnect fabric [e.g., Fig.1]; and for each interconnect element in the path, aggregating requirements associated with the selected flow with requirements for each flows selected previously and determining whether the aggregated requirements exceeds a capacity of the interconnect element [e.g., Abstract; paragraphs 17, 75-81; Fig.8]; and

repeatedly selecting a flow that has not yet been selected from the plurality of flows and performing the sequence of steps until each of the flows of the plurality has been selected or a negative determination is reached [e.g., claim 1; note that the indices I, J and K are selected to cover the entire search space].

Ambiehl does not specifically teach using the computer to implement the method. However, computer is a well-known tool for carrying out computation intensive processes. It would have been obvious to one of ordinary skill in the art to utilize a computer to implement Ambiehl's method because the computer is fast and accurate for performing sophisticated equations and optimization process such as those shown on paragraphs 20-29.

5. As to claims 7-9, Ambiehl further teaches that the aggregated requirements include bandwidth requirements;

requirements of ports for each of the plurality of flows; and determining whether a number of available ports of one or more of the interconnect elements is exceeded by the aggregated requirements of ports [e.g., Abstract and paragraph 81; note that Ambiehl expresses the bandwidth requirements in terms of bit rates of packets transferring through the links].

6. As to claim 10, Ambiehl teaches that the method further comprising: determining whether a flow corresponds to a valid path through the interconnect fabric, a valid path starting at a source node for the flow; terminating at an end node for the flow; and passing through a contiguous subset of the interconnect elements [e.g., Abstract and paragraph 6].

7. As to claim 11, Ambiehl further teaches rejecting the design if it does not include a valid path for each flow [e.g., paragraph 17].

8. As to claims 14-15 and 20-24, since the features of these claims can also be found in claims 1-2 and 7-11, they are rejected for the same reasons set forth in the rejection of claims 1-2 and 7-11 above.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3-4 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ambiehl et al.(hereafter "Ambiehl") [U.S. PGPub 20020122421], as applied to claims 1-2, 7-11, 14-15 and 20-24 above, further in view of Dere et al.(hereafter "Dere") [U.S. Pat. No. 5802286].

11. As to claim 3, Ambiehl teaches that an interconnection node (or device) in the packet switching network can be symbolizes as having a bank of input/output ports, multiplexer (which in essence behaves like a switch), and FIFO, respectively and switched Ethernet networks are

very widespread example of packet switching network [paragraphs 6 and 10-14]. Ambiehl does not specifically teach that the interconnect devices include hubs.

However, in the same field of endeavor, Dere teaches that Ethernet switch, hub, and ATM switch are examples of physical devices that can be configured to create a virtual network [e.g., Dere: Fig.2].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ambiehl and Dere, and include hubs as network devices in Ambiehl's packet switching network because Dere's embodiments employ more realistic physical devices and its design procedure would broaden the use of Ambiehl's method (e.g., to include the very popular hub-oriented LAN environments in the design and verification processes).

12. As to claim 4, Ambiehl and Dere further teach that when the interconnect devices includes a hub, the method further comprises: identifying an extent of a domain of hub connected components [e.g., Dere: 360, 365, 350, Fig.3 and col.8, lines 52-65; col.9, lines 10-21].

13. Claims 12-13 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ambiehl et al.(hereafter "Ambiehl")[U.S. PGPub 20020122421], as applied to claims 1-11 and 14-24 above, further in view of Cowan et al.(hereafter "Cowan")[U.S. PGPub 20010039574].

14. As to claims 12-13, Ambiehl does not specifically teach providing a backup path for a primary path and associate both paths with the same flow to determine whether the design has capacity for each of the paths, so that when the backup path may take the place of the primary path if the latter fails.

However, Cowan teaches providing redundant paths for primary paths in consideration of fault-tolerance [e.g., Abstract; paragraphs 36, 52, 62; note that being a backup path for a primary path, it is necessary that the backup path have at least the same capacity as that of the primary path].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ambiehl and Cowan by providing backup paths in Ambiehl's design and verification process (i.e., verifying that both the primary and backup paths satisfy the aggregated requirements) because providing redundant elements is a well-known method of boosting a network's reliability.

15. As to claims 25-26, since the features of these claims can also be found in claims 1 and 12-14, they are rejected for the same reasons set forth in the rejection of claims 1 and 12-14 above.

16. claims 5-6 and 18-19 are objected to as being dependent on rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. Applicant's arguments filed on 7/24/06 for claims 1- 4, 7-17 and 20-26 have been fully considered but they are not deemed to be persuasive.

18. Applicant argues that Ambiehl does not teach: (1) considering each flow by repeatedly selecting one of the plurality of flows (w.r.t. claim 1); (2) neither Ambiehl nor Dere teaches how a hub into Ambiehl's method (w.r.t. claim 3); and (3) neither Ambiehl nor Cowan provides a sufficient teaching that would indicate how the method of Ambiehl could be extended to redundant paths or even that it would be possible to extend the method of Ambiehl to redundant paths (w.r.t., claims 12 and 25).

19. The examiner respectfully disagrees with Applicant's arguments.

As to points (1)-(3), Applicant is reminded that the claims are now rejected under 35 USC 103, and the rationale for a rejection is weighed upon the knowledge of an ordinary skill in the art, given the teachings from the listed prior art. For example, even if Ambiehl only illustrates a verification process for certain flow type without literally saying that the verification should apply to each of the flow one by one, a skilled artisan should know that a verification process should cover the entire design and check for all applicable constraints. Unless Applicant specifically points out how would Ambiehl's approach fail in such attempt, the assumption that a skilled artisan could reasonably abridge the gaps among the explicit teachings of the listed prior art should be favored. As such, given Ambiehl's flow model of Fig. 2, an ordinary artisan should recognize that the model is also applicable to a hub because hub is a simpler, degenerated element that can be fully modeled by that of Fig.2. Likewise, given the common knowledge

about redundancy for fault-tolerance, an ordinary skill in the art would recognize that providing redundancy for a specified network flow means adding an extra path with at least the same capacity of the existing path (for the flow), and the design/verification could certainly be carried out with Ambiehl's method because Ambiehl does not limit the scale of a design and it only takes the knowledge of an ordinary skilled artisan to realize that a redundant design means adding identical flow requirement (into the original design constraints) to produce an extra path such that when one path failed the redundant path could be made available.

It is noted that although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). To avoid broad interpretation of the claim languages, Applicant is encouraged to bring in more specific features into the claims.

20. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 days from the mail date of this letter. Failure to respond within the period for response will result in ABANDONMENT of the application (see 35 U.S.C. 133, M.P.E.P. 710.02, 710.02(b)).

Conclusion

Examiner note: Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially

Art Unit: 2154

teaching all or part of the claimed invention, as well as the contest of the passage as taught by the prior art or disclosed by the Examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Tai Lin whose telephone number is (571)272-3969. The examiner can normally be reached on Monday-Friday(8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571)272-3964. The fax phone numbers for the organization where this application or proceeding is assigned are as follows:

(571) 273-8300 for official communications; and

(571) 273-3969 for status inquires draft communication.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wen-Tai Lin

Sept. 26
~~March 16~~, 2006

Wen-Tai Lin
9/26/06